a semiconductor substrate having a surface, a portion of said surface having silicon thereon and a portion of said surface having an insulator thereon, said surface further having an oxide thereover;

a chamber;

at least one workpiece holder within said chamber adapted to hold said substrate;

at least one pump adapted to evacuate said chamber to maintain a continuous vacuum in said chamber;

at least one line operatively connected between said at least one pump and said chamber for evacuating said chamber;

at least one input line adapted to provide a chemical agent into said chamber while in said continuous vacuum, said chemical agent adapted to remove said oxide from said surface of said substrate;

at least one output line adapted to remove said cleaning agent and said removed oxide from said chamber;

a reactor in said chamber, said reactor adapted to deposit a metal onto said silicon and insulator portions on said substrate surface while in said continuous vacuum;

a heating element, said heating element adapted to heat said substrate to an elevated temperature to form a silicide on said substrate surface over the silicon portion by reaction with the metal deposited thereon, while the metal remains unreacted over the insulator portion; and

an etchant to remove unreacted metal from the substrate surface while leaving said silicide over portions of said semiconductor substrate.

Please add new claims 21-30.

21. A system for selectively forming a silicide on a surface of a semiconductor substrate comprising:

said semiconductor substrate having said surface, a portion of said surface having silicon thereon and a portion of said surface having an insulator thereon, said surface further having an oxide thereover;

a chamber;

at least one pump adapted to evacuate said chamber to maintain a continuous vacuum in said chamber;

a chemical agent input into said chamber adapted to remove said oxide from said surface of said substrate while said chamber is under said continuous vacuum;

a reactor in said chamber, said reactor adapted to deposit a metal onto said silicon and insulator portions on said substrate surface while under said continuous vacuum;

a heating element, said heating element adapted to heat said substrate to an elevated temperature to form a silicide on said substrate surface over the

silicon portion by reaction with the metal deposited thereon, while the metal remains unreacted over the insulator portion; and

an etchant to remove unreacted metal from the substrate surface while leaving said silicide over portions of said semiconductor substrate.

22. The system of claim 21 wherein said chamber comprises a plurality of interior chambers, at least one interior chamber adapted to remove said oxide from said surface of said substrate while under said continuous vacuum, and at least one interior chamber adapted to deposit said metal on said surface of said substrate while under said continuous vacuum.

23. The system of claim 22 wherein said apparatus is adapted to transfer said substrate between said interior chamber adapted to remove said oxide from said surface of said substrate and said interior chamber adapted to deposit said metal on said surface of said substrate without breaking said continuous vacuum.

24. The system of claim 21 wherein said metal is cobalt.

25. The system of claim 21 wherein said chemical agent is selected from the group consisting of nitrogen triflouride and argon.

26. The system of claim 21 wherein said reactor for depositing said metal on said surface of said substrate is a vapor sputtering device.

27. The system of claim 21 wherein said heating element resides within said chamber.

28. The system of claim 21 wherein said heating element is external thereto said chamber.

29. The system of claim 21 wherein said unreacted cobalt is removed using an etchant comprising hydrogen peroxide and sulfuric acid.

30. An apparatus in combination with a semiconductor substrate for selectively forming a silicide thereon a surface of said semiconductor substrate comprising:

a portion of said semiconductor substrate surface having silicon thereon and a portion of said surface having an insulator thereon, said surface further having an oxide thereover;

a chamber;

at least one workpiece holder within said chamber adapted to hold said semiconductor substrate;

at least one pump adapted to evacuate said chamber to maintain a continuous vacuum in said chamber;

at least one line operatively connected between said at least one pump and said chamber for evacuating said chamber;

at least one input line adapted to provide a chemical agent into said chamber while in said continuous vacuum, said chemical agent adapted to remove said oxide from said surface of said substrate;

at least one output line adapted to remove said cleaning agent and said removed oxide from said chamber;

a reactor in said chamber, said reactor adapted to deposit a metal onto said silicon and insulator portions on said substrate surface while in said continuous vacuum;

a heating element, said heating element adapted to heat said substrate to an elevated temperature to form a silicide on said substrate surface over the silicon portion by reaction with the metal deposited thereon, while the metal remains unreacted over the insulator portion; and

an etchant to remove unreacted metal from the substrate surface while leaving said silicide over portions of said semiconductor substrate.